REMARKS

Examiner Rajnikant B. Patel is thanked for the thorough examination and search of the subject Patent Application.

Claims 1 and 16 have been amended.

All Claims are believed to be in condition for Allowance, and that is so requested.

Reconsideration of the rejection of claims 1-13, and 16-23 under 35 U.S.C. 103(a) as being unpatentable over Applicant's prior art figure 2 and Lambropoulos et al. (U.S. patent # 4,611,154) is requested, based on the following remarks:

Applicant's prior art figure 2 does not disclose the utilization of an impedance connected between gate of pass device and bias driving stage as taught in the amended claim 1 of the claimed invention:

1. (currently amended) A circuit to improve the stability of a low drop-out (LDO) voltage regulator comprising:

a means of an adaptive biased driving stage of said LDO;

an impedance, keeping the gate pole of a pass transistor close to the resonance frequency, being connected on one side to said means of an adaptive biased driving stage and on the other side to the gate of a pass device of said LDO;

said pass device of said LDO, wherein its gate is connected to said impedance and the source and drain are connected to V_{DD} voltage and to the output voltage of said LDO; and

a filter capacitor being connected to ground and to the output voltage of said LDO.

Lambropolous et al. disclose (col. 3, lines 27-38) :

> "The present invention relates to a circuit for operating a power switch of the type used to direct a high magnitude driving current from a power supply through an electric load circuit such as the type employed in motor vehicles, which new circuit overcomes all of the disadvantages of the standard arrangement for protecting the fan motor in a motor vehicle and exhibits further advantages of being easily miniaturized, low cost, useful as a substitute for existing plug-in relay units and capable of preventing damage of the load instead of just deactivating the power switch in response to a load damaging condition."

Furthermore Lambropoulos et al. teach (Col.8, lines 46-55):

> "In accordance with the present invention, there is provided a testing network or means for directing high frequency, low duty cycle, low level current for a preselected testing cycle through motor circuit 14. This testing network, or means, includes a driving transistor Q1 formed as a discrete element on printed circuit board PC and a current limiting resistor 40, also a discrete component. Base lead 42 connects integrated circuit IC with the base of transistor Q1 for controlling the bias on the base through resistor 44."

Additionally (Col 9, lines 7-9) Lambropoulos et al. teach:

> "In operation, as shown in FIG. 3, the voltage to base lead 42 is a series of pulses having a width of 30 microseconds and continuing for 3.0 seconds. The period of each pulse is 100 microseconds; therefore, transistor Q1 is on 30% of the time."

Summarizing the references shown above, Lambropoulos et al. disclose a testing network directing a high frequency, low duty cycle through a motor circuit via a

transistor Q1 wherein a resistor is used to control the bias on the base of transistor Q1 and the voltage to said base is a series of pulses, while Applicant's prior art figure 2 does not disclose the utilization of an impedance connected between gate of pass device and bias driving

The claimed invention teaches:

(1) "Field of the Invention

> This invention relates generally to voltage regulators, and more particularly to an enhancement of low dropout voltage regulators having an adaptive biased driving stage in order to improve stability through a very wide range of output current."

The claimed invention discloses (abstract, page 21, lines 1-7):

> "A method and circuits to improve the stability of low dropout voltage regulators having an adaptive biased driving stage. Said improvement of stabilization is valid through the total range of output current possible. A serial impedance is added to the gate capacitance of the PMOS pass device of said LDO. Said serial impedance could be a resistor or a transistor. In case of low load currents said impedance is not dominating, for high load currents said impedance keeps the gate pole close to the resonance frequency of the output tank."

Key of the claimed invention is keeping the gate pole of the pass transistor close to the resonance frequency as disclosed in claim **1** shown above and in Claim **16**. LDO

regulators have a tendency to get an instable closed loop control if no precautions are taken. The amended Claim **16** teaches:

16. (currently amended) A method to improve the stability of a low drop-out (LDO) voltage regulator comprising:
providing a pass device for an adaptive biased driving stage;
add a serial impedance to the gate capacitance of said pass device in order to keep the gate pole of said pass device close to the resonance frequency; and
shunt partly said impedance in case of medium load currents as far as required.

Lambropoulous et al. teach a topic very different to the topic of the claimed invention and it is believed to be non-obvious to use a resistor to control a high frequency, low duty cycle on the base of a transistor with the claimed invention namely a pass transistor of a low drop-out (LDO) regulator, wherein a closed loop control is providing a constant output voltage and a serial impedance keeps the gate pole of the pass transistor close to the resonance frequency.

None of the applied references address the problem of keeping the gate pole of the pass transistor of an LDO close to the resonance frequency. Furthermore Lambropoulos et al. do not disclose nor suggest to use the resistor shown in their Fig. 4 for applications as e.g. an LDO of the claimed invention requiring a stable closed loop control. Therefore a modification of prior art as shown in applicant's prior art fig.2 utilizing the technique taught by Lambropoulos et al. is believed to be non-obvious.

The claimed invention is believed to be patentable over applicant's prior art fig.2 and over the teachings of Lambropoulos, as it is respectfully suggested that the combination of these two references cannot be made without reference to Applicant's own invention. The circuits of claims 1-15 and methods of claims 16-23 are all believed to be novel and patentable over these references because there is not sufficient basis for concluding that the combination of the claimed elements would have been obvious to one skilled in art. That is to say there must be something in the prior art or line of reasoning to suggest that the combination of these two references is desirable. We believe that there is no such basis for the combination. We therefore request examiner Rajnikant B. Patel to reconsider his rejection in view of these arguments.

Reconsideration of the objection to claims 14-15 as being dependent upon a rejected base claim, but being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim is requested, based on the following remarks:

Claims 14-15 are dependent claims upon base claim 1 which is believed to be patentable according the arguments above.

Allowance of all Claims is requested.

It is requested that should the Examiner not find that the Claims are now Allowable that the Examiner call the undersigned at 845-452-5863 to overcome any problems preventing allowance.

Respectfully submitted,

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